



Short report

Teaching forensic medicine in the University of Porto

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ABSTRACT

The University of Porto (UP) provides education in Forensic Medicine (FM) through the 1st, 2nd and 3rd cycle of studies, post-graduation and continuing education courses. This education is related to forensic pathology, clinical forensic medicine (including forensic psychology and psychiatry), forensic chemistry and toxicology, forensic genetics and biology, and criminalistics. With this work we intent to reflect on how we are currently teaching FM in the UP, at all levels of university graduation. We will present our models, regarding the educational objectives, curricular program and teaching/learning methodologies of each cycle of studies as well as in post-graduate and continuing education courses. Historically, and besides related administratively to the Ministry of Justice, the Portuguese Medico-Legal Institutes (since 1918) and more recently the National Institute of Legal Medicine and Forensic Sciences (INMLCF) also have educational and research responsibilities. Thus, it lends space and cooperates with academic institutions and this contribution, namely regarding teaching forensic sciences in Portugal has been judged as an example for other Countries. This contribution is so important that in UP, the Department of Legal Medicine and Forensic Sciences of the Faculty of Medicine (FMUP) shares, until now, the same physical space with North Branch of the INMLCF, which represents a notorious advantage, since it makes possible the “learning by doing”.

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1. Introduction

Forensic Medicine (FM) is the study and application of medical knowledge to the administration of justice.¹ The increasing scrutiny by the judicial system and recognition of the specialized nature of FM has led the need for an academic basis for this discipline. In fact, all physicians, regardless of specialty that embraces, are often required to act in cases of FM nature (e.g. physical and biological evidence preservation, avoiding its lost, destruction or contamination; detection and report of suspect cases of abuse; characterization, description and photodocumentation of wounds and injuries).²

Therefore, it is important that for physician's edification, pre and post-graduate education in FM is available, providing them useful

knowledge and skills, as well as capabilities to independently seek for scientific information and to properly use and update their knowledge, and validate practices. In addition, they should be aware of the consequences of their practices not only in health, but also in legal, social and economic fields, considering the rights and quality of life of their patients.

This work aimed to reflect about our experience of teaching FM in the University of Porto (UP), at all levels of university graduation, and always in collaboration with the North Branch of the Portuguese National Institute of Legal Medicine and Forensic Sciences (INMLCF). This Institute works in areas related to forensic pathology, clinical forensic medicine (including forensic psychology and psychiatry), forensic chemistry and toxicology, forensic genetics and biology, and criminalistics. Historically, and besides related administratively to the Ministry of Justice, the Portuguese Medico-Legal Institutes (since 1918) and more recently the National Institute of Legal Medicine and Forensic Sciences (INMLCF) also have educational and research responsibilities. Thus, it lends space and cooperates with academic institutions and this contribution,

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namely regarding teaching forensic sciences in Portugal has been judged as an example for other Countries. This contribution is so important that in UP, the Department of Legal Medicine and Forensic Sciences of Faculty of Medicine (FMUP) shares, until now, the same physical space with the North Branch of the INMLCF, which represents a notorious advantage, since it makes possible the “learning by doing”.

We will discuss the educational objectives, curricular program and teaching and learning methodologies. It is presented the model practiced for 1st, 2nd and 3rd cycle of studies, as well as in post-graduate and continuing education courses, since we consider that all these moments of education are fundamental to the sound development of FM and other forensic sciences.

2. 1st cycle of studies: forensic medicine in the integrated master in medicine

Nowadays, the undergraduate teaching of FM is a reality in most medical schools around the world, although different designations and contents may occur, normally defensible by the particularities of each judicial system and forensic organization.^{1,3} Indeed, some FM practices are not unique for specialists in this area and there are several transversal contents that must be learnt by all future physicians. This includes not only some technical procedures (as referred above) but also patients' approach, namely if victims of violent situations.

The Perugia Document of October 1991, revised in Cologne in July 1992 (Perugia/Cologne Document) is a guideline for the undergraduate teaching of FM and has been adopted by official representatives from almost all European countries. The topics dealt with include: thanatology and forensic pathology, clinical legal medicine, ethics, medical jurisprudence and related legislation. Nevertheless, this document is not up to date and it is mandatory to give future physicians an early advanced and robust education.

Our curricular program is articulated with the syllabus of the other curricular units of the Integrated Master in Medicine (IMM) of the UP and is oriented for a “useful learning” necessary for all medical practice. The overall objective is to create a period of acquisition of basic knowledge, skills, and attitudes in FM in order to prepare future physicians to correctly act in the best interest of their patients, and always respecting the law, when confronted in their professional life with issues of forensic nature, regardless their future specialty. That will certainly contribute to the proper administration of justice, to promote protection, safety and reintegration of victims, and to promote violence prevention. The curriculum is devoted to a general and comprehensive education and not with the goal of creating truth FM specialists.

Accordingly, to the curricular plan of IMM, FM is a 5th year independent curricular unit (3 ECTS – European Credit Transfer System). The period of contact focus on seminars and practical classes (Table 1). Seminars are devoted to the presentation of some theoretical issues always based in real cases. Syllabus only includes topics of clinical nature with forensic implications, which future physicians will be confronted in their professional life. For practical education, it is ensured a minimum 1/7 ratio teacher/student, and students are encouraged to take active participation in the different procedures themselves, for instance in autopsies.⁴ Finally, aiming to complete a master integrated thesis, students can perform research activity and publish their results in the FM scope.^{5–7}

3. 2nd and 3rd cycle of studies in forensic sciences

The 2nd and 3rd cycle of studies in forensic sciences begun in 2003 and 2007, respectively, and the 3rd cycle is almost pioneer all over the world. They offer a multidisciplinary education, including seven

Table 1

Syllabus of the Curricular Unit of FM of the IMM of UP.

Seminars	<ul style="list-style-type: none"> • Forensic medicine. Aims, specific expert skills and methodological procedures. The need for multidisciplinary cooperation • Biomechanics of wound and injuries. The causality nexus between the trauma and the damage • Physician approach to victims of trauma: dealing with the crisis and grief; avoiding secondary victimization and testimony contamination • Risk factors and markers of abuse. Detection, report, diagnosis and intervention in these cases • Assessment of post-traumatic personal injury in Penal, Civil and Labor law. The physician's role • The physician's role at the death scene. Evidence management and chain of custody • Sudden death. The physician's role and the legal and public health relevance of these autopsy cases • Violent death resulting from aggression, suicide or accident. The physician's role and the legal and public health relevance of these autopsy cases
Practical classes	<ul style="list-style-type: none"> • Training description of wounds and injuries (with photos, kits of lesions simulation and real cases) • Training on forensic photography • Training for selection, collection, preservation and storage of physical and biological evidence and other biological samples • Training approach to victims and their families (role-playing) • Training on sexual assault forensic examination (in mannequins) • Training on death diagnosis, death certification, clinical information to be provided to forensic services, and report of suspected crimes (filling of official forms) • Participation in forensic autopsies • Participation in clinical forensic medicine exams (post-traumatic personal injury assessment; domestic violence cases; sexual crimes)

schools of UP: FMUP (also administrative institution), Faculty of Law, Faculty of Psychology and Educational Sciences, Faculty of Pharmacy, Institute of Biomedical Sciences of Abel Salazar, Faculty of Dentistry and Faculty of Sciences. Although these courses are more suitable for specialists in FM and other forensic practitioners, they also serves the interests of other physicians (e.g. orthopedists, gynecologists, psychiatrists, psychiatrists and pediatricians), who aim to develop specific skills in areas of forensic intervention. Both cycles of studies represent a field for specific training of professionals in issues aiming to obtain and valuing forensic evidence, in a collaborative multidisciplinary context and always evidence based. They also concerns to developing student's capabilities for scientific research in this area, preventing practices that arise from an empirical expertise or just resting on the experience of foreign counterparts. The major difference between both cycle of studies is that a student of the PhD degree should reach higher levels of autonomy to develop scientific research, namely capabilities to supervise other student's thesis within the forensic sciences, particularly in the selected specialization area.

The curriculums of the 2nd (4 semesters; 120 ECTS) and 3rd cycle (4 semesters; 240 ECTS) of studies are organized in an independent common curriculum and an optional specialization curriculum that the students must choose. Finally, students will present a thesis at the end of the 2nd and 4th years in the Master and PhD programs, respectively. Tables 2 and 3 present the detailed curricular plans.

4. Continuing education in forensic medicine

All over the world the absence of post-graduate training is often cited as the reason for graduates not entering in forensic sciences or being unwilling to provide forensic services.⁸ The post-graduate education should be systematically considered and integrated in the university activities planned for each year, given its key role in the update of new theoretical and practical knowledge, and developing

Table 2

Curricular plan of the 2nd cycle of studies. *Optional specialization lines. T – theoretical classes; P – practical classes; S: seminars; TO: tutorial orientation.

	Curricular Unit	ECTS	Contact hours
Common curricular plan	Juridical Sciences and Criminology	3	T: 20
	Forensic Clinical Sciences	9	T: 40
	Forensic Laboratorial Sciences	6	T: 40
	Research Methodologies in Forensic Sciences	3	TP: 20
	Thesis Project	12	T: 10; TO: 71
	Tutorials Seminars	3	S: 20
	Thesis	57	TO: 385
Forensic Medicine*	Personal Injury Assessment	6	T: 20; P: 20
	Forensic Pathology	6	T: 20; P: 20
	Abuse and Neglect	6	T: 20; P: 20
	Forensic Dentistry and Anthropology	6	T: 20; P: 20
	Curricular Unit from other line	6	T: 20; P: 20
Forensic Psychiatry and Psychology*	Psychology and Justice System	6	T: 20; P: 20
	Particular Issues in Forensic Psychopathology	6	T: 20; P: 20
	Forensic Neuropsychology	6	T: 20; P: 20
	Forensic Pedopsychology	6	T: 20; P: 20
	Curricular Unit from other line	6	T: 20; P: 20
Laboratorial Forensic Sciences*	Forensic Genetics	6	T: 20; P: 20
	Forensic Chemistry and Documentation	6	T: 20; P: 20
	Forensic Biology and Geology	6	T: 20; P: 20
	Forensic Toxicology	6	T: 20; P: 20
	Curricular Unit from other line	6	T: 20; P: 20

new professional competences for physicians. In this respect, the FMUP offers two post-graduate courses: the Post-graduate Course in Forensic Sciences and the Post-graduate Course on Assessment of Post-traumatic Personal Injury.

4.1. Post-graduate course in forensic sciences

It is a multidisciplinary course, which attend students from different educations, namely physicians who find in this course the opportunity to acquire competences in forensic sciences aiming to develop FM activity, at the private or public level, regardless their specialty. The current curricular plan is presented in Table 4.

The overall objective is to promote the acquisition of basic knowledge, guidance for performance and skills aiming to educate different professionals to work correctly and in an interdisciplinary cooperation when confronted in their professional field with issues related to forensic sciences. There are always several physicians attending to this course, since it enables them to participate in forensic medical activity, namely as future collaborators of the INMLCF.

4.2. Post-graduate course on assessment of post-traumatic personal injury

The course aims to improve the knowledge, skills and attitudes of physicians and medical dentists engaged or likely to be dedicated to the assessment of post-traumatic personal injury. This course is focused in the rules and interview techniques required to obtain adequate information about the event, and in the methodologies of

Table 3

Curricular plan of the 3rd cycle of studies. *Optional specialization lines. T – theoretical classes; P – practical classes; TO: tutorial orientation.

	Curricular Unit	ECTS	Contact hours
Common curricular plan	Advanced Topics in Forensic Sciences	9	T: 43
	Advanced Research Methodologies in Forensic Sciences	6	T: 28
	Free Curricular Unit of other 3rd cycle of studies of UP	13	...
	Thesis Project	12	T: 10; TO: 47
	Thesis	180	TO: 851
Forensic Medicine*	Post-traumatic Personal Injury Assessment	9	P: 42
	Forensic Pathology	9	P: 42
	Abuse & Neglect	9	P: 42
	Forensic Dentistry and Anthropology	9	P: 42
	Curricular Unit from this or other line	12	...
Forensic Psychiatry and Psychology*	Psychology and Justice System	12	P: 56
	Judicial Sciences	6	TO: 28
	Criminology	6	P: 28
	Curricular Unit from this or other line	12	...
Laboratorial Forensic Sciences*	Forensic Genetics	12	P: 56
	Forensic Toxicology	12	P: 56
	Forensic Chemistry	6	P: 28
	Forensic Geology	6	P: 28
	Forensic Botanic and Entomology	6	P: 28
	Documentation analysis and hand writing	6	P: 28
	Curricular Unit from this or other line	12	...

evaluation accordingly to the legal framework. Particularly important is the interpretation of the post-traumatic permanent consequences for the victim taking into account the evaluation by different medical specialties. Studies plan is presented in Table 5. Students will get a diploma that is mandatory to obtain the “Competence on Personal Injury Assessment” awarded by the Portuguese Medical Association. This is of the interest of several medical specialties, namely orthopedic, neurosurgery, physical medicine and rehabilitation, among others.

4.3. Continuing education courses

Since 2003, FMUP in collaboration with the North Branch of the INMLCF, organize on a regular basis several ECTS continuing education courses, some of them of multidisciplinary nature and others addressed to specific professionals, namely police, lawyers and other forensic experts. Physicians can attend the following currently available courses:

Table 4

Curricular plan of the Post-graduate Course in Forensic Sciences (2 semesters).

Curricular unit	ECTS	Contact hours
Introduction to Forensic Sciences (including Law and Deontology)	5	T: 45
Forensic Pathology (including Forensic Dentistry and Anthropology, and mandatory training)	8	T: 72
Clinical Forensic Medicine (including Forensic Psychiatry and Psychology, and mandatory training)	9	T: 81
Laboratorial Forensic Sciences (including Forensic Biology and Genetics, and Forensic Toxicology) and Criminalistics	8	T: 72

Table 5
Postgraduate Course on Assessment of Post-traumatic Personal Injury (2 semesters).

Curricular unit	ECTS	Contact hours
Introduction to Forensic Sciences (including Law and Deontology)	7	T: 45
Clinical Forensic Medicine (including Forensic Psychiatry and Psychology)	13	T: 90
Training in Clinical Forensic Medicine	10	P: 67.5

- a) Advanced Course in Forensic Ballistics;
- b) Advanced Course in Forensic Entomology;
- c) Advanced Course in Recovery of Human Cadaveric Remains in Forensic Context;
- d) Course on Assessment of Post-traumatic Personal Injury for Lawyers;
- e) Course on Child Abuse;
- f) Course on Violence Victims Intervention;
- g) Forensic Interview Course.

We consider that these courses have represented over the years important moments, in which students can, in very specific areas of forensic sciences, receive education of the latest knowledge and more correct practices, acquisition of new skills, and updating and improving the performance of others.

5. Concluding remarks

Teaching, communicating with students, is a very personal experience. It is shaped by a teacher's personality, philosophy, socialization, and commitment as well as with the environment (institution) in which he or she works. Particularly in the education of FM, the environment is of crucial importance, since decisively influenced the socialization of a teacher and therefore having routine casework and teaching in the same institution represents a major value. FM encompasses a wide range of services at the interface of medical practice and the law. Because of the fact that in the practice of medicine no physician can avoid contact with the law, it is important that medical students have important instruction regarding their legal duties in doing medicine.

In this work particularly emphasis was given to the undergraduate syllabus, since it represents the foundation of all education. In fact, it is during the 1st academic cycle of studies that the teacher has the opportunity and responsibility to sensitize students to the importance of other levels of education, either by doing post-graduate or continuing education courses. The respect and dedication that we have voted to teaching and to our students, allowed us to gain an essential memorandum: modesty regarding the knowledge and capabilities we possess, the honesty of our attitudes and assumption of the limits of our scientific knowledge and the humanity towards those people who attend forensic medical services. For us it is clear that the pre-graduate medical education should be oriented to the development of humanistic values, to the respect for human dignity, to a culture of demand at scientific and technical levels (and therefore quality) and to develop a critical and independent attitude regarding the knowledge. Our teaching and learning methodologies are no longer, as previously performed, characterized by the simple diffusion of information between teachers and students, but rather by practices that encourage the student's competencies to search for information, integration of knowledge, creativity and appropriate response to individual cases of daily life. Indeed, teaching and learning are not limited to acquire knowledge through the exhaustive memorization of a set of curriculums previously selected by the teacher, which are easily forgotten due to the absence of regular use or, at most, there will be

a very sporadic use in the clinic. Also, syllabus aims to limit even further the time of some theoretical classes and we advocate that these should be organized in discussion models by recurring to specific cases with practical application.

The 2nd and 3rd cycle of studies will promote the interdisciplinary knowledge and collaborative practices within forensic sciences that are usually not possible to be offered by the IMM. It is our believe that FM should be available to establish a more dynamic dialogue with other disciplines, to promote mutual enrichment of knowledge and the production of high quality multidisciplinary research, through a contribution and commitment.^{9,10}

To ensure that the syllabus of the different levels of education, met the expectations and requirements of the students, a feedback is obtained by an evaluation questionnaire. This evaluation questionnaire will ultimately be important to introduced further improvements aiming to reach the high-expected levels of quality.

At the end of this commentary, it is also important to focus on our forensic and academic cooperation. All over the world FM has been developing largely in isolation from academic science, and has been shaped more by the practical needs of the justice system than by a peer-reviewed research.¹¹ Madea and Saukko stated that FM will only survive as an academic discipline by concentrating on its scientific duties, not by increasing of routine casework.¹¹ This certainly requires a mandatory mentality change aiming to assure the quality of the routine case work.² That will of course be sometimes difficult to achieve due the dominance of economic problems and duties to give answers related to the increase workload of forensic routine. The Portuguese reality intends to minimize these problems,² since INMLCF has a privileged relationship with academic institutions that teaches FM, namely by sharing facilities and establishing protocols and guidelines for continuous education in this area.

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Conflict of interest
The authors report no declarations of interest.

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